

Applicant : Robert C. Sundahl
Serial No. : 09/897,738
Filed : June 29, 2001
Page : 8 of 11

Attorney's Docket No.: 10559-438001/P10655

REMARKS

In the Office Action mailed April 11, 2003, the Examiner rejected pending claims 1-22 and claims 23-29 were withdrawn from consideration as being drawn to a non-elected invention. Applicant has amended independent claims 1 and 17 and dependent claims 13, 15, and 21, and cancelled without prejudice claims 23-29. New claims 30-38 have been added. Claims 1-22 and 30-38 are therefore pending. Applicant asks that the Examiner reconsider the patentability of claims 1-22 in light of the amendments and the following remarks, and that the Examiner also allow newly added claims 30-38.

Election/Restriction

Applicant affirms the election without traverse to Group I, claims 1-22, drawn to a device, and also cancels, without prejudice, the Group II claims 23-29, drawn to a method of manufacturing.

Rejections under 35 U.S.C. § 102(e)

The Examiner rejected claims 1-15, 17-21 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,274,978 B1, issued to Roach *et al.* ("Roach"). The Examiner made various characterizations of Roach, some of which are addressed below. The Examiner also stated that the claim language, which appears in claims 1 and 17, reciting "the thermally conductive elements provide a path of low thermal resistance from the OLED pixels to the back panel" was not given patentable weight because the Examiner considered it to be an intended use recitation.

Amended claims 1 and 17 have been amended to more clearly define the novel structure that provides for the heat dissipation and that distinguishes the prior art. Support for this amendment appears in the specification as originally filed, for example, at page 8, lines 17-30. No new matter is introduced by this amendment.

Roach discloses a display formed from light-emitting fibers 100 (also referred to as "ribbons") in a side-by-side construction (Col. 3, lines 22-46). Each fiber 100 has a series of light-emitting elements 150 disposed in a linear (one-dimensional) manner along the fiber 100 (Col. 3, lines 31-34; FIGS. 5, 9A, and 10). Thus, when the fibers 100 are placed side-by-side, a

Applicant : Robert C. Sundahl
Serial No. : 09/897,738
Filed : June 29, 2001
Page : 9 of 11

Attorney's Docket No.: 10559-438001 / P10655

two-dimensional array of light-emitting elements 150 is formed (Col. 3, lines 34-40; FIGS. 2, 9A, and 10). Roach discloses a circuit substrate 210 that could be made from a traditional printed wiring board material or from a ceramic material (Col. 6, lines 40-43). A metal base sheet is laminated to the ceramic material to provide strength, but contrary to the Examiner's assertion, Roach does not suggest that the metal base sheet is laminated to the ceramic material to dissipate heat in any manner or that the ceramic material is thermally conductive to facilitate heat dissipation from the light-emitting elements.

In addition, the Examiner contended that line segment conductors 230 are "anode contacts," but Roach discloses that contacts 162 serve to connect the anode lines (first electrodes 120) to the solder bumps 234 and corresponding circuitry 228/240 at the edge of the display 10 (Col. 4, lines 6-25; FIG. 3). According to Roach, line segment conductors 230 serve the purpose of cathode lines, not "anode contacts" as asserted by the Examiner (Col. 4, lines 8-10; FIG. 3). In particular, an individual contact 140 is formed directly over each light-emitting element 150 while the line segment conductors 230 are formed separately on the circuit substrate 210 (Col. 7, lines 1-23; FIG. 5). Solder bumps 232 are positioned between the light-emitting elements 150 and the line segment conductors 230 (cathode lines) to form an electrical connection (FIG. 3).

Roach does not disclose Applicant's invention as set forth in either independent claim 1 or claim 17. Unlike the invention of amended claim 1, the Roach reference does not disclose that each thermally conductive element is positioned between the back panel and a conductive line in thermal contact with one of the OLED pixels, such that heat generated by the OLED pixels is dissipated through the conductive line, the thermally conductive elements, and the back panel, and to the heat dissipating structure. Unlike amended claim 17, Roach does not disclose that each solder joint is positioned between the back panel and either an anode line or a cathode line such that the solder joint provides thermal dissipation from the OLED pixel, to the back panel, and to the heat dissipating structure.

Instead, Roach discloses that solder bumps 232 are positioned between the light emitting elements 150 and the conductor lines 230 (cathode lines) -- a structure that is different from that describes in claim 1 or 17. Roach teaches that the solder bumps 232 are used merely to make electrical connections between the light-emitting elements 150 and the line segment conductors 230. Roach does not describe any type of heat transfer through the backside of the display 10

Applicant : Robert C. Sundahl
Serial No. : 09/897,738
Filed : June 29, 2001
Page : 10 of 11

Attorney's Docket No.: 10559-438001 / P10655

using a heat dissipation structure. The Roach reference does not disclose each and every element of independent claims 1 and 17. Accordingly, claims 1, 17, and all related dependent claims are not anticipated by Roach under 35 U.S.C. § 102(e).

Also, Roach does not render obvious the subject matter of claims 1 and 17. Roach teaches of display 10 constructed from side-by-side ribbons or fibers 100 having light-emitting elements 150. Roach provides no teaching that would have suggested the desirability of modifying an OLED display to improve the thermal dissipation from the OLED elements. The Roach reference describes the use of light-emitting fibers 100 as sufficient to construct a large-size display, with no suggestion of dissipating the heat generated by the OLED elements. Accordingly, one of ordinary skill in the art would have had no reason to consider additional modifications to the Roach reference to improve the thermal dissipation from the OLED elements. Rather, one of ordinary skill in the art would have appreciated the use of thermally conductive elements for thermal dissipation from the OLED pixel to the back panel and for improved electrical characteristics only upon access to Applicant's specification (see, e.g., Applicant's specification pages 8-9). As such, Roach does not render obvious independent claim 1 or claim 17.

Accordingly, independent claims 1 and 17 each define an invention that is patentable in view of Roach, as do dependent claims 2-16 and 18-22.

Rejections under 35 U.S.C. § 103(a)

The Examiner rejected dependent claims 16 and 22 under 35 U.S.C. § 103(a) as being unpatentable over Roach in view of U.S. Patent No. 5,396,403 issued to Patel ("Patel"). The Examiner contended that Patel discloses or suggests features recited in dependent claims 16 and 22, but not in the independent claims 1 and 17.

As previously described, Roach does not disclose or suggest all of the elements in any of the amended claims 1 and 17. Patel also does not disclose the claimed elements that are lacking in the Roach reference, and the Examiner does not contend that Patel does disclose the missing features. Thus, even if the display of Roach were modified in view of Patel's teaching, the resulting combination would not satisfy the requirements of any of the independent claims 1 and 17. As such, claims 1 and 17 are also not rendered obvious by Roach, Patel, or any combination

Applicant : Robert C. Sundahl
Serial No. : 09/897,738
Filed : June 29, 2001
Page : 11 of 11

Attorney's Docket No.: 10559-438001 / P10655

thereof. Accordingly, the rejected dependent claims 16 and 22 are not rendered obvious by Roach, Patel, or any combination thereof.

Added Claims 30-38

New independent claim 30 is directed to an OLED display having thermally conductive elements formed at each OLED pixel and positioned between the cathode line and the electrical interconnection line. Support for claim 30 appears in the specification as originally filed, for example, from page 5, line 4 to page 6, line 14. Dependent claims 31-34 are also supported by the specification as originally filed (see, e.g., FIGS. 3-4; page 5, line 4 to page 6, line 27). No new matter is introduced by new claims 30-34. The Roach reference does not disclose or suggest thermally conductive elements formed at each OLED pixel and positioned between the cathode line and the electrical interconnection line of the back panel. As such, claims 30-34 are not anticipated nor rendered obvious by Roach.

New independent claim 35 describes an OLED display including a centrally located OLED pixel that has an anode contact located at the non-edge location, and a thermally conductive element on the anode contact at the non-edge location. Support for claim 35 appears in the specification as originally filed, for example, at page 7, lines 24-31. Dependent claims 36-38 are also supported by the specification as originally filed (see, e.g., FIGS. 5-7; page 5, line 4 to page 6, line 27). No new matter is introduced by new claims 35-38. Roach does not disclose or suggest a centrally located OLED pixel that has an anode contact located at the non-edge location. To the contrary, Roach teaches that the light-emitting elements 150 share a common anode contact 162 and solder bump 234 at each end of the ribbon 100. Accordingly, claims 35-38 are not anticipated nor rendered obvious by Roach.

Applicant respectfully submits that added claims 30-38 are patentable and requests that the Examiner allows the claims in their current form.

FAX RECEIVED

JUN 19 2003

TECHNOLOGY CENTER 2800